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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/519,841	01/12/2005	Frank Dietsche	263524US0PCT	7205

22850 7590 09/16/2009

OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER	
KRUER, KEVIN R	
ART UNIT	PAPER NUMBER
1794	

NOTIFICATION DATE	DELIVERY MODE
09/16/2009	ELECTRONIC

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oblonpat@oblon.com
jgardner@oblon.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte FRANK DIETSCHE,
THOMAS JAWOREK,
REINHOLD SCHWALM,
MARTIN WEBER, and
HELMUT STEININGER

Appeal 2009-003796
Application 10/519,841
Technology Center 1700

Decided: September 14, 2009

Before CATHERINE Q. TIMM, MICHAEL P. COLAIANNI, and JEFFREY B. ROBERTSON, *Administrative Patent Judges*.

TIMM, *Administrative Patent Judge.*

DECISION ON APPEAL

I. STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's decision rejecting claims 1-9 and 16-24. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

The invention relates to a coating system including a radiation-curable clear coat as a topcoat over an elastic intercoat and a method of making the coating system. The multicoat is placed on a substrate. Claim 1 is illustrative of the coating system on the substrate (reformatted for clarity):

1. A multicoat system, on a substrate (A), comprising:

a clear coat of at least one radiation-curable coating system (F), and, optionally, at least one coat (E), which is pigmented and/or provided with effect substances, and which is adjacent to and under coat (F),

said coat comprised of said coating system (F) and optional coat (E) constituting a topcoat, and

at least one elastic intercoat (D), which is located between the substrate (A) and the topcoat, and has a glass transition temperature (T_g) of -20°C or less (measured in the frequency range up to 1000 Hz),

wherein the substrate has an impact strength to DIN ISO 179/lfU at 23°C and 50 % humidity of at least 20 kJ/m^2, and the ratio (V) of the intercoat thickness (ZS) to the total thickness of the intercoat and the topcoat (DL), expressed as V = ZS(ZS + DL), in the multicoat system, is at least 0.05 at a temperature of at least 25°C.

The Examiner rejects all the claims under 35 U.S.C. § 103(a). Specifically, the Examiner rejects:

A. Claims 1-9 and 16-24 as unpatentable over Mack (US 6,500,883 B1, Dec. 31, 2002) in view of (a) Otaki (US 6,482,489 B1, issued Nov. 19, 2002) and (b) Downey (US 3,880,953, issued Apr. 29, 1975) or Korpman (US 4,136,071, issued Jan. 23, 1979);

B. Claims 1-9 and 16-24 as unpatentable over Onozawa (US 6,103,370, Issued Aug. 15, 2000) in view of (a) Matsuoka (JP 405318671 A, pub. Dec. 3, 1993) (as translated) and (b) Downey or Korpman; and

C. Claims 1-7, 9, 17-19, and 21-24 as unpatentable over Van den Bergh (US 2003/0104245 A1, pub. Jun. 5, 2003)[1] in view of Van Havenbergh (US 5,334,842, issued Aug. 2, 1994).

To the extent Appellants argue the claims separately with sufficient specificity, we consider the claims separately for each of the rejections in accordance with 37 C.F.R. § 41.37(c)(1)(vii).

II. REJECTION A

With respect to the rejection over Mack in view of (a) Otaki and (b) Downey or Korpman, we first consider the rejection of claim 1. With respect to claim 1, the Examiner concludes that it would have been obvious to one of ordinary skill in the art to apply the hologram of Otaki to the molded articles of Mack (electronic devices and parts for motor vehicles) to provide an authenticating mark on Mack's articles. The Examiner finds that the molded articles of Mack are "substrates" within the meaning of the claims and the hardcoat and pressure-sensitive adhesive layers of Otaki's holographic laminate are a clear topcoat and elastic intercoat, respectively, within the meaning of the claim. (*See* Ans. 4-5.)

Claim 1 requires that the elastic intercoat have a glass transition temperature (T_g) of -20°C or less and the Examiner acknowledges that Otaki does not disclose the glass transition temperature of the pressure sensitive

[1] Appellants and the Examiner and the patent document itself refer to "Van den Bergh" as "Bergh". However, the correct surname of the first named inventor is "Van den Bergh."

adhesive. Otaki describes selecting styrene block copolymers for the pressure sensitive adhesive, and the Examiner relies upon Downey and Korpman as teaching styrene block copolymer based adhesives having the required T_g. (Ans. 5.)

Appellants contend that none of the references applied by the Examiner are directed to clearcoat technology, the field of Appellants' invention, and that, additionally, the references are directed to fields of technology different from each other (Br. 3-4 and 18). Appellants contend that they "do not understand on what basis the references can be combined" (Br. 4) and that "the combined principal references do not suggest the present invention" (Br. 6 and 19).

Appellants further contend that the Downey and Korpman patents "are believed to be irrelevant to the present invention, because these patents disclose pressure sensitive adhesive formulations which are not employed in the topcoating system of the present invention." (Br. 6.) Appellants argue that the adhesives of Downey and Korpman require tackifying resin, a component not required in the elastic intercoat of the present invention (Br. 6; Reply Br. 2-3).

Issue

The main issue is: Have Appellants established that the Examiner reversibly erred in finding a reason to combine the teachings of the applied prior art such that all the limitations of claim 1 are taught or suggested?

Principles of Law

It is well settled that during patent prosecution claim terms are given their broadest reasonable interpretation, taking into account any enlightenment by way of definitions or otherwise found in the specification.

In re ICON Health and Fitness, Inc., 496 F.3d 1374, 1378-79 (Fed. Cir. 2007). This longstanding principle is based on the notion that "during patent prosecution when claims can be amended, ambiguities should be recognized, scope and breadth of language explored, and clarification imposed." *In re Zletz*, 893 F.2d 319, 321-22 (Fed. Cir. 1989). "[A]s applicants may amend claims to narrow their scope, a broad construction during prosecution creates no unfairness to the applicant or patentee." *ICON Health,* 496 F.3d at 1378-79.

"The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007). As long as some suggestion to combine the familiar elements is provided by the prior art taken as a whole, the law does not require that the familiar elements be combined for the reasons contemplated by the inventor. *In re Beattie*, 974 F.2d 1309, 1312 (Fed. Cir. 1992).

Findings of Fact

According to Appellants, hard radiation curable clearcoats provide high scratch resistance to, for example, the plastic surfaces of automobiles (Spec. 1, ll. 10-21). But there is a problem with conventional clearcoats: Microcracks propagate through the coating to the substrate underlying the coating and damage the substrate (Spec. 1, ll. 10-21). The object of Appellants' invention is to develop a coating system having high scratch resistance with good adhesion to the substrate as well as reduced crack propagation (Spec. 2, ll. 5-12). Appellants achieve their object by applying an elastic intercoat with a specified glass transition temperature (-20°C or less) between the radiation-curable clearcoat system and the substrate (Spec.

2, ll. 14-19). The elastic intercoat stops cracks from reaching and damaging the substrate (Spec. 2, ll. 21-26).

As compounds having a glass transition temperature (T_g) within the required range (Spec. 6, l. 44 to 7, l. 2), the Specification exemplifies thermoplastic elastomers such as styrene-butadiene block copolymers including styrene-butadiene-styrene (SBS), styrene-isoprene-styrene (SIS), styrene-ethylene/butylenes-styrene (SEBS), etc. (Spec. 7, ll. 17 to 8, l. 46). Kraton D and G grades are very particularly preferred (Spec. 9, ll. 6-13). The thermoplastic elastomers may be admixed with mineral oil, polystyrene, polyolefins, fillers, or additives (Spec. 9, ll. 1-4).

Mack describes injection molding housings for electrical devices and parts for motor vehicles using a filled polyamide polymer with good impact resistance (Mack, col. 6, ll. 26-35).

Otaki describes holographic laminates applied to goods (substrates) to verify that the goods are authentic (Otaki, col. 1, ll. 6-13). Figure 3A of Otaki is reproduced below:

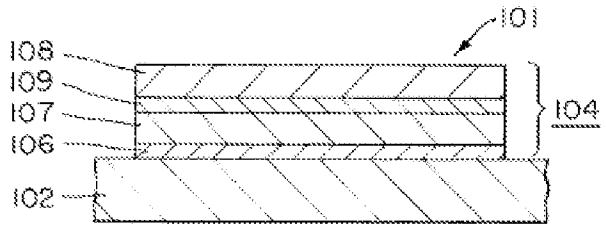

Fig. 3A is a cross-section view of a holographic laminate 101
(Otaki, col. 11, ll. 61-62)

As shown in Figure 3A, Otaki's holographic laminate 101 includes, from the bottom up, a substrate 102, a first pressure-sensitive adhesive (PSA) 106, a hologram 107, a second pressure-sensitive adhesive (PSA) 109, and a

transparent film 108 (Otaki, col. 14, ll. 59-64 and col. 20, ll. 1-7). If necessary, a hardcoat may be provided on the transparent film 108 to protect the surface (Otaki, col. 20, ll. 22-26). This hardcoat may be formed from a UV curable urethane acrylate (Otaki, col. 20, ll. 27-30).

Both PSA layer 106 and PSA layer 109 of Otaki are between the hardcoat (topcoat) and the substrate 102.

Otaki discloses that thermoplastic elastomers such as SBS, SIS, and SEBS, may be used in the pressure-sensitive adhesive (PSA) (Otaki, col. 20, ll. 67 and col. 21, ll. 16-20).

Downey describes a SIS block copolymer (Kraton 107) with a T_g of -70°C in Example III for use in a pressure-sensitive adhesive (PSA) composition containing 100 parts of the SIS and 100 parts tackifying resin (Downey, col. 6, ll. 43-68).

Korpman teaches thermoplastic elastomeric pressure-sensitive adhesives (PSAs) based upon SIS block copolymers blended with SI simple block copolymers (Korpman, col. 1, ll. 18-54) and including tackifier resins (Korpman, col. 2, ll. 15-23).

Analysis

Appellants' claim 1 is directed to a multicoat system. The multicoat system must contain a clearcoat including at least one radiation-curable coating system (F) as a part of a topcoat. The multicoat system must also include at least one elastic intercoat with a T_g in a specified range and located between the substrate and topcoat. Other than a thickness limitation that is not in dispute, the claim does not require that the elastic intercoat have any other structural features or properties.

There is no real dispute that Otaki suggests a holographic laminate including a radiation-curable clearcoat/topcoat (the optional UV curable hardcoat) as well as a coating of pressure sensitive adhesive (PSA) in the claimed location between the clearcoat/topcoat and a substrate (Fig. 3A at 106 and 109). The Examiner has provided evidence that some of the compounds suggested for use in Otaki's pressure sensitive adhesive (SBS, SIS, and SEBS, Kraton grades) have glass transition temperatures well within the claimed range (*see* Otaki, Downey, Korpman, and Appellants' Specification as discussed in the FF above). This evidence is unrebutted and supports the Examiner's finding that Otaki suggests selecting pressure sensitive adhesives (PSAs) having the properties of the claimed "elastic intercoat."

Appellants argue that "there is a clear distinction between the PSAs of the two references [Downey and Korpman] and the elastic intercoat (D) of the present claims" because the two references include tackifier resin (Reply Br. 2). However, Appellants provide no convincing evidence that a tackifier resin would raise the T_g of the composition to levels outside the claimed range. The function of a tackifier resin is to make the composition more tacky, i.e., less hard and brittle, as is consistent with lowering the T_g rather than raising it. Therefore, we determine that the Examiner's position is reasonable and unrebutted.

Nor can we agree that Appellants have shown that the Examiner reversibly erred in finding a reason to combine the teachings of Mack and Otaki. The reason provided by the Examiner, i.e., to provide the molded article of Mack with a holographic authenticating mark, flows from the teachings of the references (*see* FF above). Once the combination is made,

an article including a clearcoat/topcoat (Otaki's hardcoat), an elastic intercoat (either of Otaki's PSA layers), and a substrate (polyamide molded article of Mack) is suggested.

Appellants have not established that the Examiner reversibly erred in finding a reason to combine the teachings of the applied prior art such that all the limitations of claim 1 are taught or suggested.

With regard to claim 2, Appellants contend that Otaki does not teach what is claimed (Br. 5). The Examiner finds that Otaki provides the required teaching (Ans. 4).

Claim 2 requires that the multicoat system of claim 1 have, between elastic intercoat (D) and substrate (A), a coat (C) selected from a group (primer, base coat, etc.). If coat (C) is selected to be a second substrate, the multicoat additionally contains another elastic intercoat (D) layer between substrate (A) and the second substrate layer. The hologram 107 of Otaki is a second substrate within the meaning of claim 2. The PSA layer 106 is an elastic intercoat located between the substrate (A) (Otaki's substrate 102) and the second substrate layer (hologram 107). The evidence supports the Examiner's finding that Otaki describes what is required by claim 2. Appellants have not established that the Examiner reversibly erred in rejecting claim 2 as obvious.

With regard to claims 3-9 and 16-24, Appellants rely upon the arguments they presented with respect to claim 1 and/or merely state that none of the references discloses or suggests what is claimed. Appellants do not advance any arguments sufficiently specific to any additional issue of obviousness with regard to these claims and, therefore, Appellants have not shown that the Examiner reversibly erred in concluding that the subject

matter of the these claims is unpatentable under 35 U.S.C. § 103(a). We sustain the rejection of these claims for the reasons presented above.

III. REJECTION B

With respect to the rejection of claims 1-9 and 16-24 as unpatentable over Onozawa in view of (a) Matsuoka and (b) Downey or Korpman, we first consider the rejection of claim 1. With respect to claim 1, the Examiner finds that Onozawa teaches a hardcoat sheet which when applied to a window pane substrate meets the topcoat, elastic intercoat, substrate structure of the claim (Ans. 5-6). Using a rationale analogous to that of the above discussed rejection, the Examiner finds that Onozawa suggests using styrene butadiene block copolymers to adhesively adhere the hardcoat sheet to the window pane, and again relies upon Downey and Korpman as evidence that such adhesives with T_g in the claimed range were known in the art (Ans. 5-6). The Examiner relies upon Matsuoka for its teaching of a window panel substrate having the impact strength required by the claim (Ans. 6).

Appellants contend that Onozawa does not describe the laminated structure of the present invention, and that Matsuoka does not overcome the deficiency (Br. 9-10; Reply Br. 3). Appellants again argue that the Downey and Korpman patents "are believed to be irrelevant to the present invention, because these patents disclose pressure sensitive adhesive formulations which are not employed in the topcoating system of the present invention." (Br. 11.) Appellants also contend that the adhesive of Downey does not have the required T_g (Br. 11).

Issue

The issue is: Have Appellants established that the Examiner reversibly erred in finding that the combination of references suggest a laminated structure as claimed?

Additional Findings of Fact

Onozawa suggests forming a hardcoat sheet including a base sheet and a coating layer on the base sheet (Onozawa, col. 1, ll. 44-47). The coating is radiation-curable (Onozawa, col. 1, ll. 47-50). An adhesive layer may be provided on the back of the base sheet so that the hardcoat sheet may be adhered to window panes (Onozawa, col. 3, ll. 63-65). Onozawa suggests using SIS, SBS, and SEBS block copolymers in the adhesive (Onozawa, col. 4, ll. 3-10).

Analysis

The evidence reasonably supports the position of the Examiner. After the hardcoat sheet of Onozawa is adhered to a window pane as suggested by the reference, the structure includes a radiation curable topcoat (coating layer), a base layer, an adhesive layer, and a substrate (window pane). Onozawa suggests using the same type of styrene block copolymers which the evidence (Downey, Korpman, and Appellants' Specification discussed in the Fact Findings made in reference to the first rejection) reasonably shows have the T_g required by Appellants' claim. Onozawa suggests using an adhesive having the properties of the claimed elastic intercoating. Onozawa suggests a topcoat, elastic intercoat, substrate laminate arrangement.

Appellants have not established that the Examiner reversibly erred in finding that the combination of references suggest a laminated structure as claimed.

With regard to claim 2, Appellants argue that none of the references describe a layer (C) that is selected from the materials described which is layered between the elastic intercoat (D) and substrate (A) (Br. 11). However, Onozawa describes a base sheet having the structural requirements of a "basecoat" within the meaning of the claim. Appellants have not established that the Examiner reversibly erred in rejecting claim 2.

With regard to claim 8, Appellants disagree with the Examiner's finding that attaching the window pane within a frame meets the requirements of claim 8 (Br. 10). Appellants, however, do not address the Examiner's alternative finding that a hardcoat sheet may be applied to both surfaces of a window and such an embodiment would meet the requirements of the claim (Ans. 14; Reply Br. 3). Therefore, Appellants have not established that the Examiner reversibly erred in rejecting claim 8.

With regard to claims 3-7, 9, and 16-24, Appellants rely upon the arguments they presented with respect to claim 1 and/or merely state that none of the references discloses or suggests what claimed. Appellants do not advance any additional arguments sufficiently specific to the issue of obviousness with respect to these claims and, therefore, Appellants have not shown that the Examiner reversibly erred. We sustain the rejection of these claims for the reasons presented above.

IV. REJECTION C

With respect to the rejection of claims 1-7, 9, 17-19, and 21-24 as unpatentable over Van den Bergh in view of Van Havenbergh, we again first

consider the rejection of claim 1. The Examiner applies Van den Bergh for its teaching of a self-support layer (substrate), a phosphor-containing layer with a binder of Kraton G resin (elastic intercoat), and a clear urethane acrylate radiation curable protective layer (clear topcoat) (Ans. 7). According to the Examiner, Van den Bergh is directed to a radiation image storage panel, and Van Havenbergh teaches that the substrate of such panels may be formed from polyethylenes (such as LUMIRROR), metal, polyamide, polyimide, and the like. The Examiner concludes that it would have been obvious to use polyamide, polyimides, and metals with high impact strength as the substrate in Van den Bergh. (Ans. 7.)

Appellants contend that the binder component of Van den Bergh's phosphor layer is not a separate layer of the laminated structure and the rubbery material (Kraton G) does not form the equivalent of the elastic layer of the present claims (Br. 14-15; Reply Br. 3-4). Appellants further contend that the support material of Van Havenbergh is for a radiographic screen and the radiographic screen is not a clearcoat system of a radiation curable coating material (Br. 15-16). The Appellants argue that because the Van den Bergh and Van Havenbergh references relate only to radiographic screens, they do not disclose or suggest a clearcoating system as required by claim 1 (Br. 16).

Issue

The issue is: Have Appellants established that the Examiner reversibly erred in finding that Van den Bergh teaches a laminate structure including a clear topcoat, an elastic intercoat, and a substrate?

Findings of Fact

Van den Bergh teaches a radiation storage panel for radiography including a self-supporting or supported layer of phosphor particles in binder and a protective coating (Van den Bergh, ¶ [0017]). Particularly useful as the binder are the Kraton-G rubbers (Van den Bergh, ¶ [0041]).

Van Havenbergh is directed to a radiographic screen including a support, a layer including phosphor dispersed in binder, and optionally an outer protective coating (Van Havenbergh, col. 3, ll. 26-33).

Analysis

Appellants do not dispute that Kraton-G, the binder used by Van den Bergh, has a T_g in the claimed range or that the resulting phosphor-containing layer would have the required T_g. Nor do Appellants dispute that Van den Bergh suggests, in the supported layer embodiment, placing the phosphor-containing layer on a support and further coating it with a protective coating that is radiation curable. Rather Appellants argue that the references are related to radiographic screens, not a clearcoating system. We agree that the references are related to radiographic screens, but we disagree that this fact somehow distinguishes the coating structure on a substrate suggested by the references from what is claimed, a series of coatings on a substrate. Appellants have not established that the coating and substrate elements relied upon by the Examiner and suggested by the references are distinguishable in either structure or properties from the multicoat system on a substrate required by claim 1.

Appellants have not established that the Examiner reversibly erred in finding that Van den Bergh teaches a laminate structure including a clear topcoat, an elastic intercoat, and a substrate.

With respect to claims 2-9 and 16-24, Appellants rely upon the arguments they presented with respect to claim 1 and/or merely state that none of the references discloses or suggests what claimed. Appellants do not advance any arguments sufficiently specific to the obviousness of the additional limitations of these claims and, therefore, Appellants have not shown that the Examiner reversibly erred. We sustain the rejection of these claims for the reasons presented above.

V. CONCLUSION

Appellants have limited the scope of their arguments to the above issues and do not further contest the Examiner's rejection of the claims. Therefore, we sustain all of the rejections maintained by the Examiner.

VI. DECISION

The decision of the Examiner is affirmed.

VIII. TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(v).

AFFIRMED

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OBLON SPIVAK MCCLELLAND
MAIER & NEUSTADT, LLP
1940 DUKE STREET
ALEXANDRIA VA 22314